

Claims

1. Method for estimating the interference power increase in the uplink direction due to a transaction in a spread spectrum cellular telecommunication system, characterized in that the interference power increase estimate is calculated at least

partly on the basis of

- current fractional load,

- current received interference power level, and

- a load factor, which is calculated essentially on the basis of the chiprate, the bitrate of the new transaction, and the estimated required signal-to-interference ratio for the service type of the new transaction.

2. The method of claim 1, characterized in that said load factor ΔL is calculated essentially as

$$\Delta L = \frac{1}{1 + \frac{W}{SIR \cdot R}}$$

where W is the chiprate, R is the bitrate of the new transaction, and SIR is the estimated required signal-to-interference ratio for the service type of the new transaction.

3. The method of claim 1, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta - \Delta L} P_{rx_total}$$

where η is the current fractional load.

4. The method of claim 1, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta} P_{rx_total}$$

where η is the current fractional load.

5. The method of claim 1, characterized in that the transaction is a new connection.

6. The method of claim 1, characterized in that the transaction is the transmission of a data packet.

7. Admission control method in a spread spectrum cellular telecommunication system, characterized in that the method comprises steps in which

- the current received interference power is measured at a receiver,
- the interference power increase due to a new requested connection is estimated at least partly on the basis of current fractional load, current received interference power level, and a load factor, which is calculated essentially on the basis of the chiprate, the bitrate of the new connection, and the estimated required signal-to-interference ratio for the service type of the new connection,
- the sum of said current received interference power and said interference power increase is compared to a threshold, and
- resources are allocated for the new requested connection, if said sum is smaller than said threshold.

8. The method of claim 7, characterized in that said load factor ΔL is calculated essentially as

$$\Delta L = \frac{1}{1 + \frac{W}{SIR \cdot R}}$$

where W is the chiprate, R is the bitrate of the new connection, and SIR is the estimated required signal-to-interference ratio for the service type of the new connection.

9. The method of claim 7, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta - \Delta L} P_{rx_total}$$

where η is the current fractional load.

10. The method of claim 7, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta} P_{rx_total}$$

where η is the current fractional load.

11. Method for scheduling data packets in a spread spectrum cellular telecommunication system, characterized in that the method comprises steps in which

- the current received interference power is measured at a receiver,
 - the interference power increase due to a transmission of a new packet is estimated
- 5 at least partly on the basis of current fractional load, current received interference power level, and a load factor, which is calculated essentially on the basis of the chiprate, the bitrate to be used in transmission of the packet, and the estimated required signal-to-interference ratio for the successful transmission and reception of the packet,
- 10 - the sum of said current received interference power and said interference power increase is compared to a threshold, and
- resources are allocated for the transmission of the packet, if said sum is smaller than said threshold.

12. The method of claim 11, characterized in that said load factor ΔL is calculated essentially as

$$\Delta L = \frac{1}{1 + \frac{W}{SIR \cdot R}}$$

where W is the chiprate, R is the bitrate which will be used in transmission of the packet, and SIR is the estimated required signal-to-interference ratio for the successful transmission and reception of the packet.

13. The method of claim 11, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta - \Delta L} P_{rx_total}$$

where η is the current fractional load.

14. The method of claim 11, characterized in that the interference power increase estimate ΔP_{rx_total} is calculated essentially as

$$\Delta P_{rx_total} = \frac{\Delta L}{1 - \eta} P_{rx_total}$$

where η is the current fractional load.

15. System for estimating the interference power increase in the uplink direction due to a new transaction in a spread spectrum cellular telecommunication system, characterized in that

the system comprises means for calculating the interference power increase estimate at least partly on the basis of

- current fractional load,
- current received interference power level, and
- a load factor ΔL ,

and means for calculating said load factor essentially on the basis of the chiprate, the bitrate of the new transaction, and the estimated required signal-to-interference ratio for the service type of the new transaction.

16. The system of claim 15, characterized in that said means for calculating said load factor are means for calculating the load factor as

$$\Delta L = \frac{1}{1 + \frac{W}{SIR \cdot R}}$$

where W is the chiprate, R is the bitrate of the new transaction, and SIR is the estimated required signal-to-interference ratio for the service type of the new transaction.

17. Network element of a cellular telecommunications network, characterized in that the network element comprises means for calculating an interference power increase estimate due to a new transaction at least partly on the basis of

- current fractional load,
- current received interference power level, and
- a load factor ΔL ,

and means for calculating said load factor essentially on the basis of the chiprate, the bitrate of the new transaction, and the estimated required signal-to-interference ratio for the service type of the new transaction.

18. The network element of claim 17, characterized in that said means for calculating the load factor are means for calculating the load factor as

$$\Delta L = \frac{1}{1 + \frac{W}{SIR \cdot R}}$$

where W is the chiprate, R is the bitrate of the new transaction, and SIR is the estimated required signal-to-interference ratio for the service type of the new transaction.

- 5 19. The network element of claim 17, characterized in that the network element is a radio network controller.
20. The network element of claim 17, characterized in that the network element is a radio network controller of the UMTS cellular system.

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